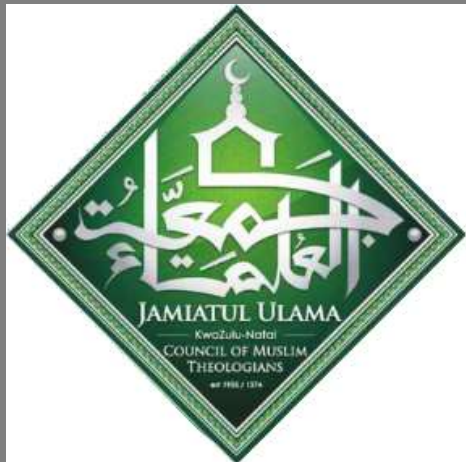


# Orbit of the Moon & Lunar Phases



**JAMIATUL ULAMA**

KwaZulu-Natal – South Africa

**COUNCIL OF MUSLIM THEOLOGIAN**

**EDUCATING \* ENLIGHTENING \* SERVING**

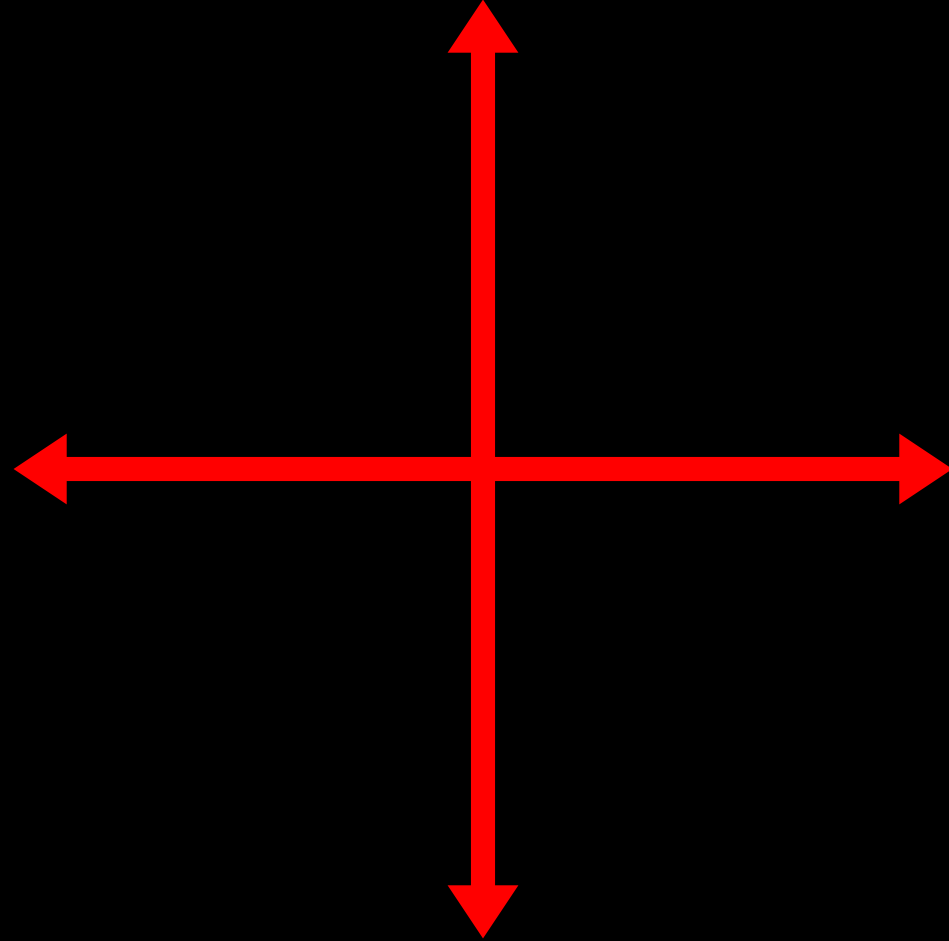
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**North (front)**

**West (left)**

**East (right)**

**South (back)**



**The Moon orbits Earth and completes one revolution in approximately 29,5 days.**

**An Islaamic month consists of either 29 days or 30 days.**

**An Islaamic year can consist of 354 days  
(6 months of 29 days and 6 months of 30 days)**

**or**

**355 days (5 months of 29 days and 7 months of 30 days)  
in a leap year.**

**The Moon has no light of its own. Rather, whatever we see of the Moon is illuminated by the sun. Half of the Moon's surface is always illuminated by sunlight.**

**The illuminated portion of the Moon that we see from Earth varies every day and this is what we refer to as a Moon phase.**

**There are nine significant Moon phases: New Moon, *Hilaal*, Waxing Crescent, First Quarter, Waxing Gibbous, Full Moon, Waning Gibbous, Last Quarter, Waning Crescent**

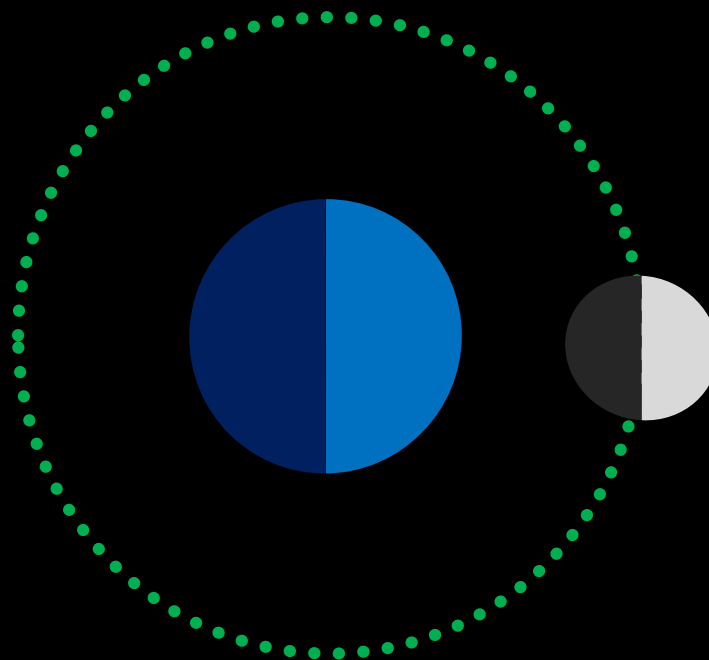
**Diagrams are not to scale.**

# New Moon

<b>Appearance</b>	<b>Not Visible</b>
<b>Rises At</b>	<b>Sunrise</b>
<b>Sets At</b>	<b>Sunset</b>
<b>Age</b>	<b>0 Days</b>



**View from Earth**

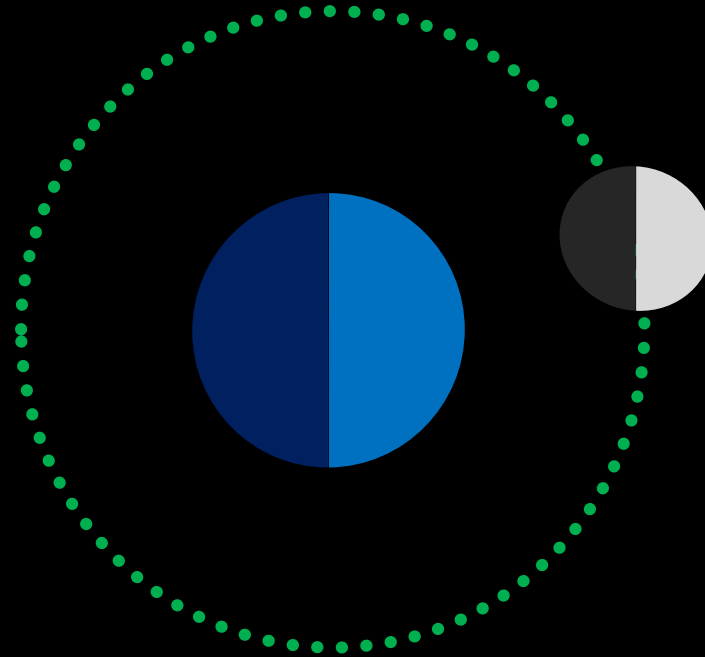


# Hilaal

<b>Appearance</b>	<b>Thin Crescent</b>
<b>Rises At</b>	<b>Sunrise</b>
<b>Sets At</b>	<b>Sunset</b>
<b>Age</b>	<b>&lt; 48 Hrs</b>



**View from Earth**

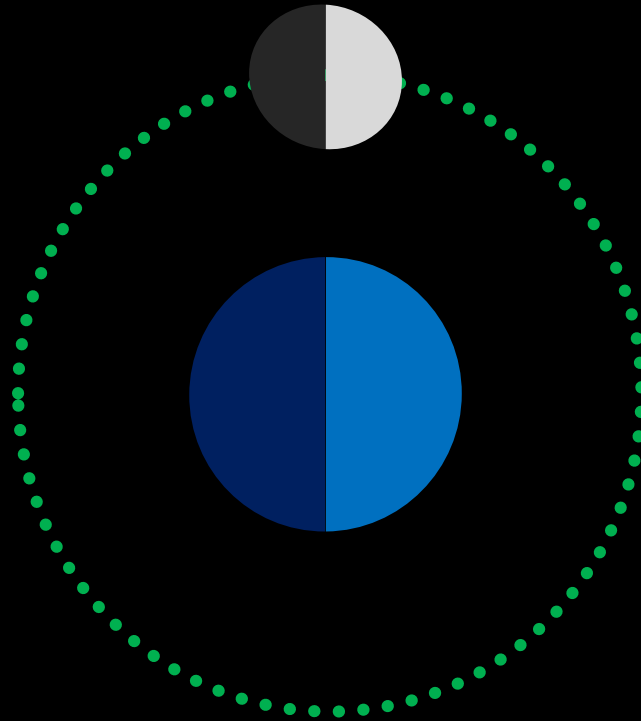


# First Quarter

<b>Appearance</b>	<b>Semi-circle</b>
<b>Rises At</b>	<b>Noon</b>
<b>Sets At</b>	<b>Midnight</b>
<b>Age</b>	<b>7 Days</b>



**View from Earth**

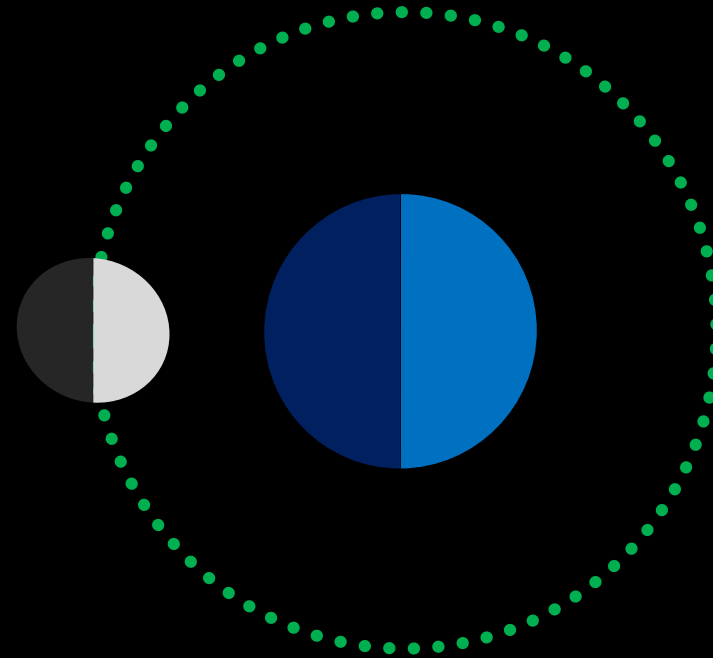


# Full Moon

<b>Appearance</b>	<b>Full Disk</b>
<b>Rises At</b>	<b>Sunset</b>
<b>Sets At</b>	<b>Sunrise</b>
<b>Age</b>	<b>14 Days</b>



**View from Earth**



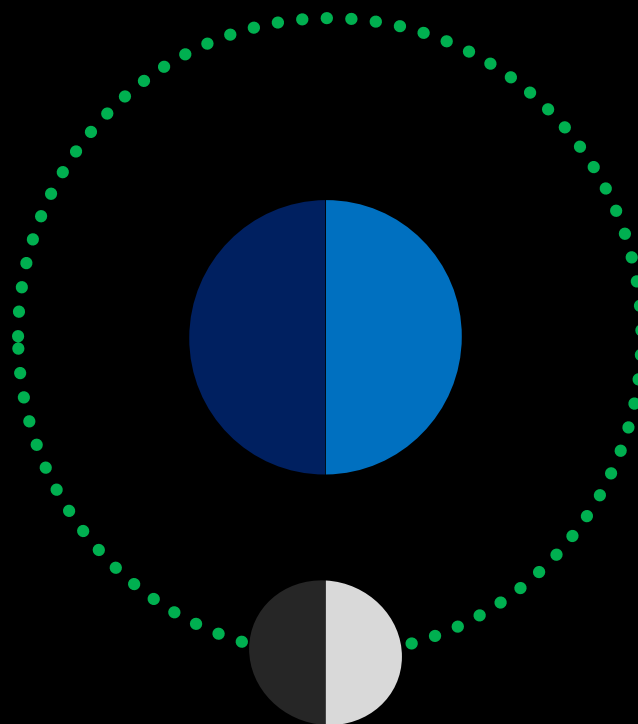


# Last Quarter

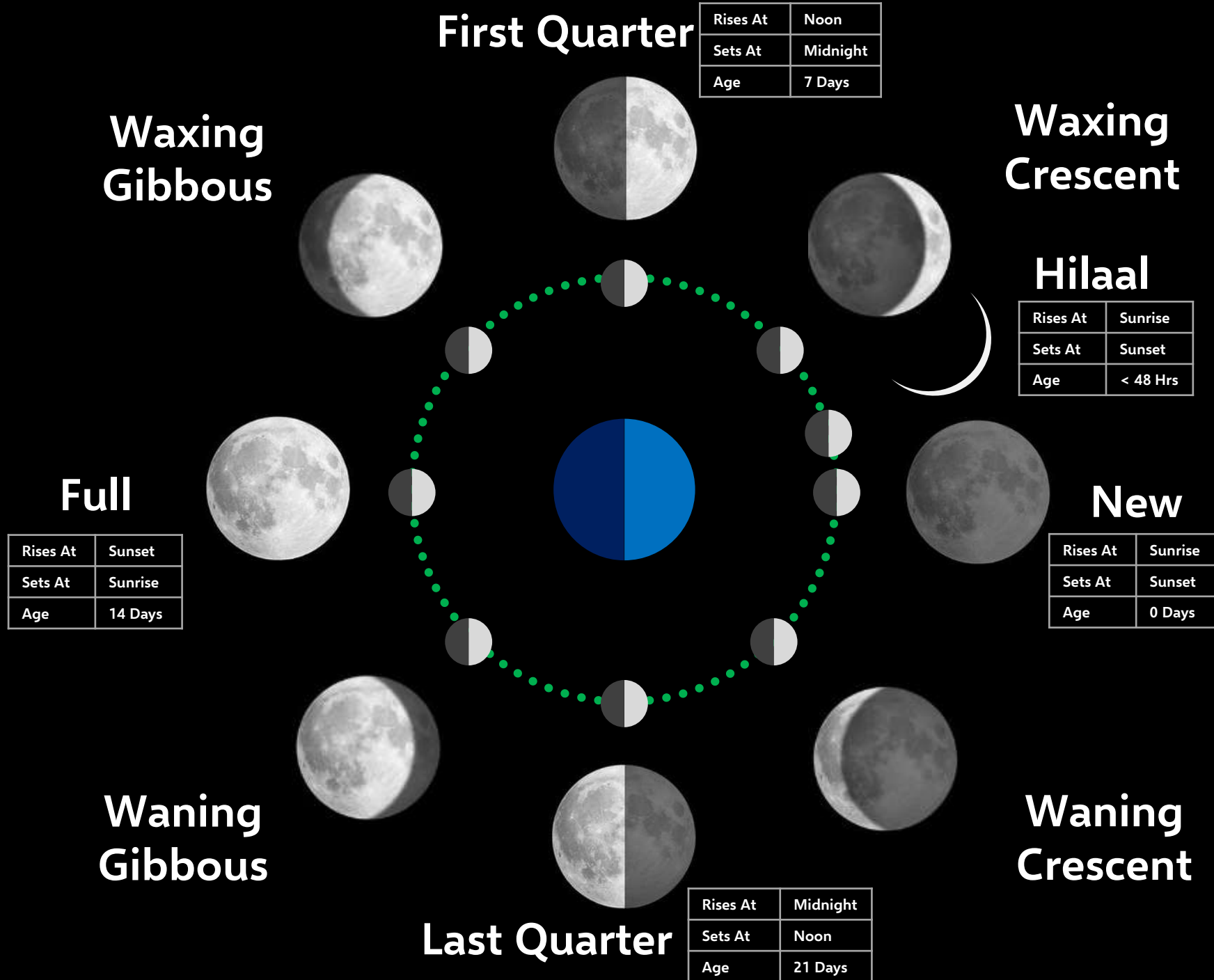
<b>Appearance</b>	<b>Semi-circle</b>
<b>Rises At</b>	<b>Midnight</b>
<b>Sets At</b>	<b>Noon</b>
<b>Age</b>	<b>21 Days</b>



**View from Earth**



# Summary Diagram



**VIEW from  
the Earth**

**Full**

**Waxing  
Gibbous**

**1st Quarter**

**Waxing  
Crescent**

**New**

**Waning  
Gibbous**

**Waning  
Crescent**

**3rd Quarter**

←  
← **Sun's**  
← **Rays**  
←

←  
← **Sun's**  
← **Rays**  
←



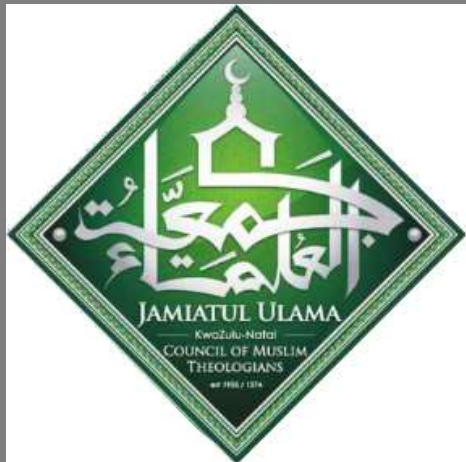
# PHASES OF THE MOON SEEN FROM LOW EARTH ORBIT



[www.eso.org](http://www.eso.org)

# Hilaal Procedures

On The Day of The Hilaal Sighting



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# Hilaal Procedures

- Choose a sighting location with a clear view of the western horizon. Higher places are better.
- Be at the sighting point at least 15 minutes before the sun sets.
- Observe the exact point where the sun sets. This is important.

# Hilaal Procedures

- **After Maghrib Salaah (approximately 20 minutes) the crescent Moon may appear somewhere above the point where the sun set. It could be slightly to the right or to the left (more easterly or westerly).**

# Hilaal Procedures

- Optical aids may be used only to locate the Moon. However, the Moon still has to be sighted with the naked eye for validity. Glasses are exempt from the ruling above because their purpose is to correct ones vision; not to enhance it.
- Phones running appropriate apps (SkyMap) may also be used to locate the Moon.



# Hilaal Procedures

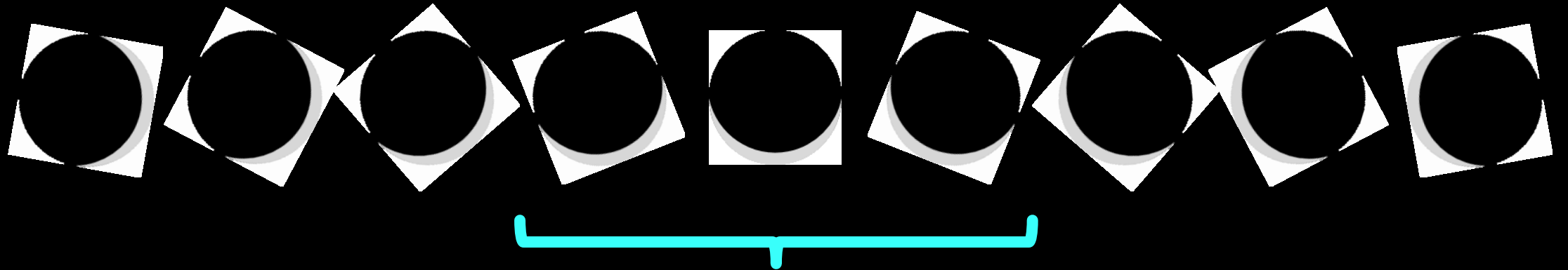
- Continue observing until Moonset or until the crescent is seen.
- If it is very overcast, then the sighting attempt may be abandoned before Moonset.

# Hilaal Procedures

- If the Moon is seen, note the exact time of sighting. This is required for verification.
- The tips of the crescent Moon may be pointing to the left/right/upwards. The rotation is variable.

# Hilaal Procedures

## Orientations of the Moon

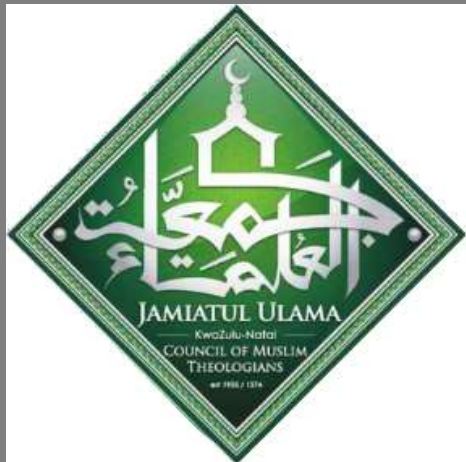


Common in South Africa

# Hilaal Procedures

- Please record the sighting results using the appropriate form – whether the Moon was sighted/not-sighted, and forward to the Central Hilaal Committee.

# Simulations, Lunar Plots & Calculations



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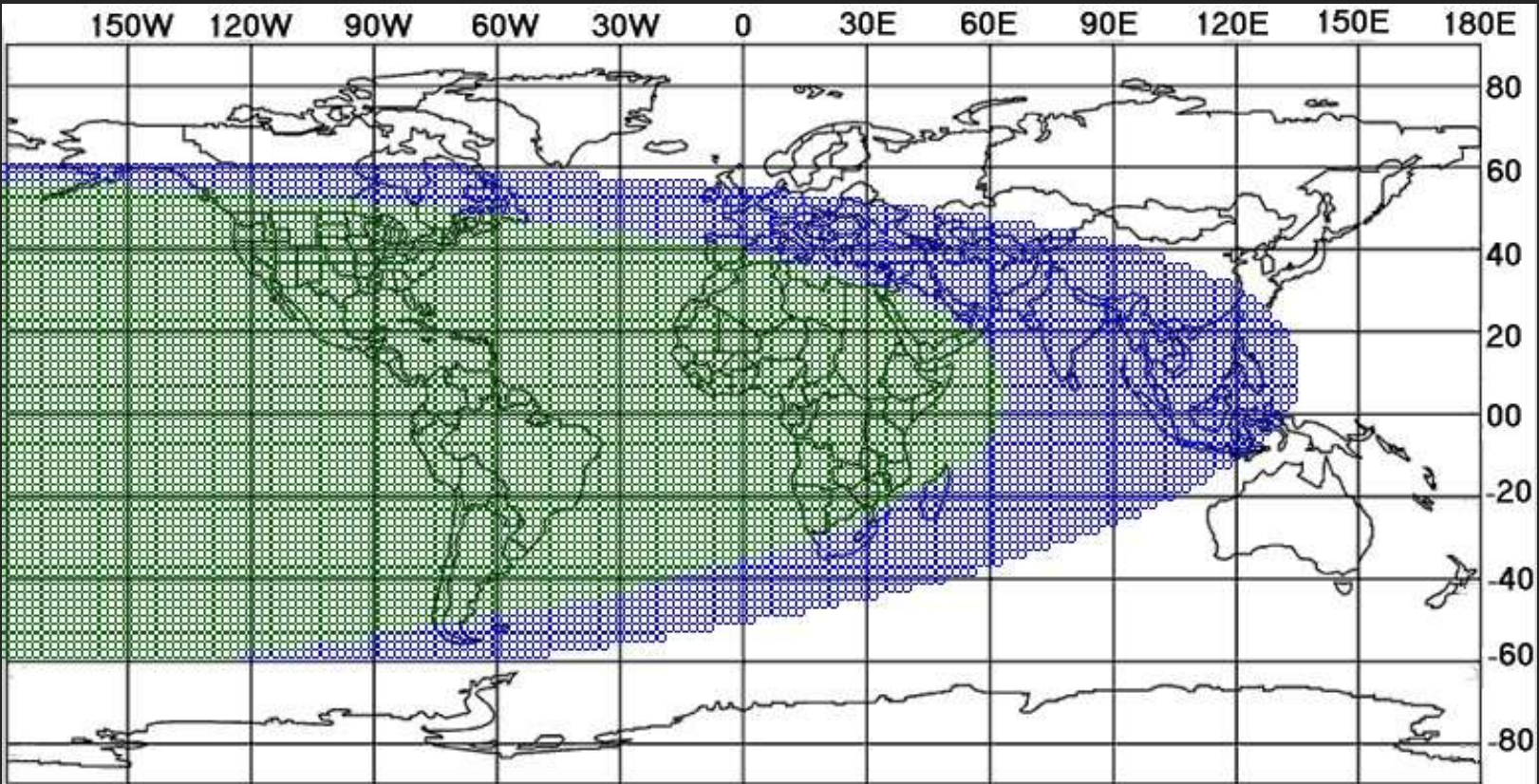
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	For	1 Shawaal 1437
	Date	Tue, 5 Jul 2016
	Sighted In SA	Yes
	Sunset	17:09
	Moonset	18:24
	Moon age	28H 08M
	Moonlag	1H 15M

# Crescent Visibility Plot



**VISIBLE**

**IMPROBABLE**

**IMPOSSIBLE**

Generated With Accurate Times

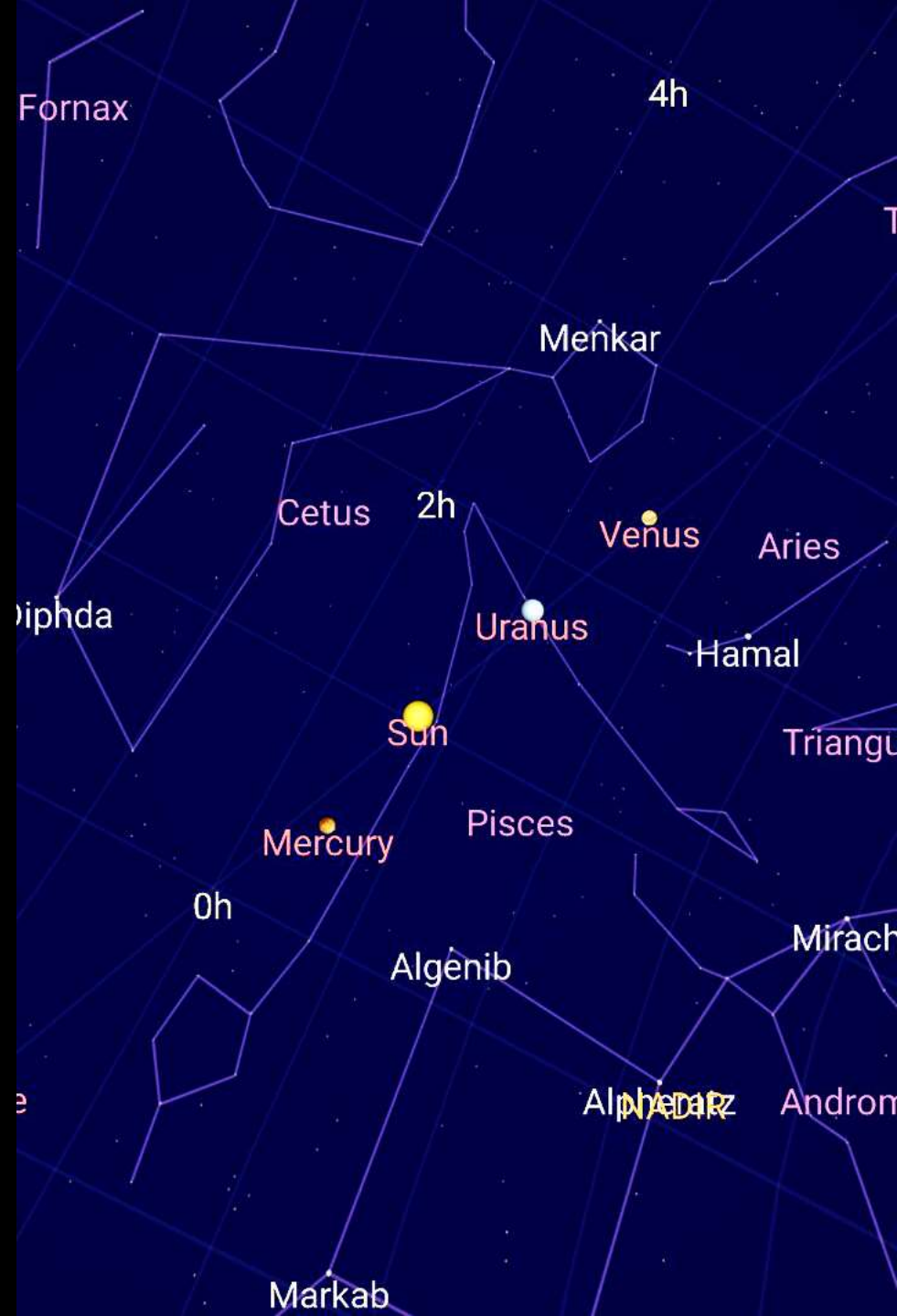
For	1 Safar 1438
Date	Mon, 31 Oct 2016
Sighted In SA	No
Sunset	18:17
Moonset	18:57
Moon age	22H 39M
Moonlag	0H 39M





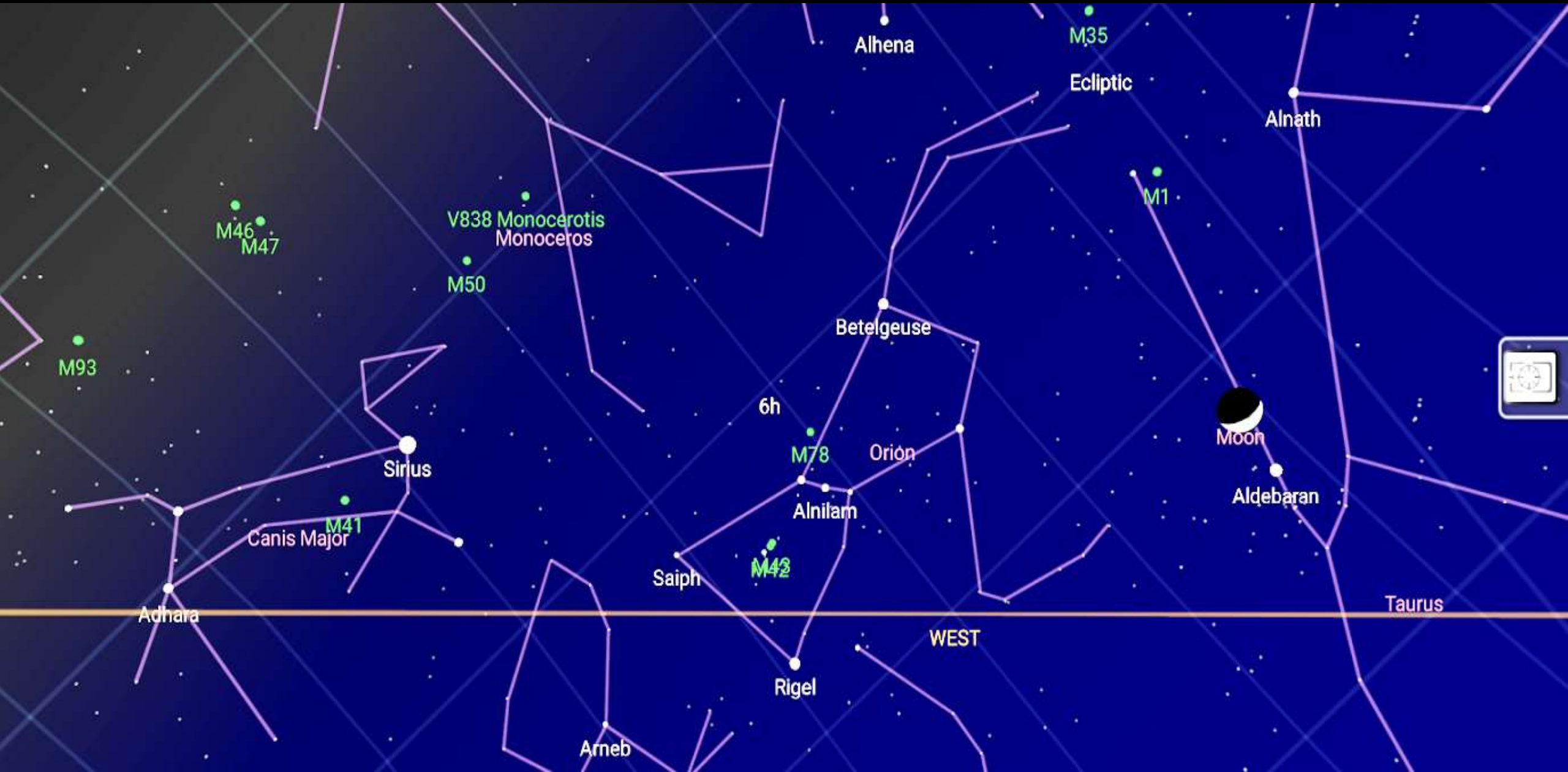
# Skymap

- Available on iOS & Android
- Free
- Has search feature
- Requires GPS
- Needs to be calibrated





# Screenshot of Skymap Showing The Moon On The Bottom Right







THE END